

## CLAIMS

What is claimed is:

1. A microcontroller comprising:
    - a central processing unit;
    - a linearized address space in operative relationship with said central processing unit, said linearized address space capable of direct or indirect addressing through a register file or a data memory;
    - a program counter register within said central processing unit, said program counter mapped in said data memory;
    - a working register within said central processing unit, said working register mapped in said data memory; and
    - an orthogonal instruction set stored in a program memory, said instruction set constructed and arranged to designate at least one operation of said microcontroller;
- wherein said microcontroller is capable of any of said operations on any of said registers using any addressing mode.